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APPLICATION NO.	FILING DATE	FIRST NAMED INVENTOR	ATTORNEY DOCKET NO.	CONFIRMATION NO.
09/634,312	08/08/2000	Mikio Kurihara	JP9-1999-0161US1(8728-410	5044

46069 7590 07/11/2005  
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EXAMINER

DUONG, THOI V

ART UNIT PAPER NUMBER

2871

DATE MAILED: 07/11/2005

Please find below and/or attached an Office communication concerning this application or proceeding.

**Office Action Summary**

Application No.

09/634,312

Applicant(s)

KURIHARA ET AL.

Examiner

Thoi V. Duong

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-- The MAILING DATE of this communication appears on the cover sheet with the correspondence address --

**Period for Reply**

A SHORTENED STATUTORY PERIOD FOR REPLY IS SET TO EXPIRE 03 MONTH(S) FROM THE MAILING DATE OF THIS COMMUNICATION.

- Extensions of time may be available under the provisions of 37 CFR 1.136(a). In no event, however, may a reply be timely filed after SIX (6) MONTHS from the mailing date of this communication.
- If the period for reply specified above is less than thirty (30) days, a reply within the statutory minimum of thirty (30) days will be considered timely.
- If NO period for reply is specified above, the maximum statutory period will apply and will expire SIX (6) MONTHS from the mailing date of this communication.
- Failure to reply within the set or extended period for reply will, by statute, cause the application to become ABANDONED (35 U.S.C. § 133). Any reply received by the Office later than three months after the mailing date of this communication, even if timely filed, may reduce any earned patent term adjustment. See 37 CFR 1.704(b).

**Status**

- 1) ☒ Responsive to communication(s) filed on 27 April 2005.
- 2a) ☒ This action is **FINAL**. 2b) ☐ This action is non-final.
- 3) ☐ Since this application is in condition for allowance except for formal matters, prosecution as to the merits is closed in accordance with the practice under *Ex parte Quayle*, 1935 C.D. 11, 453 O.G. 213.

**Disposition of Claims**

- 4) ☒ Claim(s) 1-20 is/are pending in the application.
- 4a) Of the above claim(s) \_\_\_\_\_ is/are withdrawn from consideration.
- 5) ☐ Claim(s) \_\_\_\_\_ is/are allowed.
- 6) ☒ Claim(s) 1-20 is/are rejected.
- 7) ☐ Claim(s) \_\_\_\_\_ is/are objected to.
- 8) ☐ Claim(s) \_\_\_\_\_ are subject to restriction and/or election requirement.

**Application Papers**

- 9) ☐ The specification is objected to by the Examiner.
- 10) ☐ The drawing(s) filed on \_\_\_\_\_ is/are: a) ☐ accepted or b) ☐ objected to by the Examiner.  
Applicant may not request that any objection to the drawing(s) be held in abeyance. See 37 CFR 1.85(a).  
Replacement drawing sheet(s) including the correction is required if the drawing(s) is objected to. See 37 CFR 1.121(d).
- 11) ☐ The oath or declaration is objected to by the Examiner. Note the attached Office Action or form PTO-152.

**Priority under 35 U.S.C. § 119**

- 12) ☒ Acknowledgment is made of a claim for foreign priority under 35 U.S.C. § 119(a)-(d) or (f).
- a) ☒ All b) ☐ Some \* c) ☐ None of:
1. ☒ Certified copies of the priority documents have been received.
  2. ☐ Certified copies of the priority documents have been received in Application No. \_\_\_\_\_.
  3. ☐ Copies of the certified copies of the priority documents have been received in this National Stage application from the International Bureau (PCT Rule 17.2(a)).
- \* See the attached detailed Office action for a list of the certified copies not received.

**Attachment(s)**

- |  |   |
|--|---|
| 1) <input type="checkbox"/> Notice of References Cited (PTO-892)   | 4) <input type="checkbox"/> Interview Summary (PTO-413)<br>Paper No(s)/Mail Date. _____ |
| 2) <input type="checkbox"/> Notice of Draftsperson's Patent Drawing Review (PTO-948)                                   | 5) <input type="checkbox"/> Notice of Informal Patent Application (PTO-152)             |
| 3) <input type="checkbox"/> Information Disclosure Statement(s) (PTO-1449 or PTO/SB/08)<br>Paper No(s)/Mail Date _____ | 6) <input type="checkbox"/> Other: _____  |

### DETAILED ACTION

1. This office action is in response to the Amendment filed April 27, 2005.

Accordingly, claim 13 was amended. Currently, claims 1-20 are pending in this application.

### ***Claim Rejections - 35 USC § 103***

2. The following is a quotation of 35 U.S.C. 103(a) which forms the basis for all obviousness rejections set forth in this Office action:

(a) A patent may not be obtained though the invention is not identically disclosed or described as set forth in section 102 of this title, if the differences between the subject matter sought to be patented and the prior art are such that the subject matter as a whole would have been obvious at the time the invention was made to a person having ordinary skill in the art to which said subject matter pertains. Patentability shall not be negated by the manner in which the invention was made.

3. **Claims 1, 2, 5-12, 19 and 20 are rejected under 35 U.S.C. 103(a) as being unpatentable over Fujimori et al. (Fujimori, USPN 5,852,487) in view of Hasegawa et al. (Hasegawa, USPN 5,499,128).**

Re claims 1, 10 and 12, as shown in Fig. 1, Fujimori discloses a touch sensor type liquid crystal display comprising:

a liquid crystal display panel 200a having first and second substrates 1, 2 arranged oppositely to each other by a specified gap (col. 7, lines 14-57 and col. 8, lines 42-47);

a plurality of columnar gap controlling spacers 11 formed of columnar shape for restricting a width of the gap and a spacer movement in a planar direction, wherein said gap controlling spacer is brought into surface-contact with one selected from the first and second substrates, the gap therebetween being restricted by the gap controlling spacer (col. 8, lines 58-64);

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a touch sensor 200b added to the liquid crystal display panel including fixed and movable electrode plates 2 and 3 (col. 8, lines 8-27 and 42-47),

wherein, re claims 2 and 11, said gap controlling spacers 11 are regularly arranged in a planar direction of the liquid crystal display panel (col. 8, lines 62-64) and arranged in a black matrix region of the liquid crystal display panel (col. 20, lines 30-38).

Re claims 5-9, Fujimori further discloses a grid 14 arranged between the fixed and movable electrode plates,

wherein arranging positions of said gap controlling spacer and said grid are coincident with each other; and

wherein said movable and fixed electrode plates are made of plastic films (col. 8, lines 28-57).

Fujimori et al. discloses that the touch sensor type liquid crystal display is a color display (col. 20, lines 38-41) wherein the first and second substrates of the liquid crystal display panel are arranged oppositely to each other by interpolating a liquid crystal layer, said movable electrode plate 3 serves as a touch sensor arranged oppositely to the second substrate by a specified gap, and a conductive film 5a is provided to serve as a touch sensor formed on a surface of the second substrate which faces the movable electrode plate (col. 8, lines 8-13).

Fujimori discloses a touch sensor type liquid crystal display that is basically the same as that recited in claims 1, 5, 10 and 12 except for each of the spacers having two members with one of the two members contacting the first substrate and the other of the two members contacting the second substrate and the two members contacting each

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other at a point intermediate between the first and second substrates, the cross-section of each spacer parallel to the plane of a substrate at said intermediate point being no larger in area than either of the substrate contact surfaces.

As shown in Figs. 12 and 13, Hasegawa discloses a liquid crystal display device comprising columnar spacer having two members 112d with one of the two members contacting a first substrate 111 and the other of the two members contacting a second substrate 141 and the two members contacting each other at a point intermediate between the first and second substrates,

wherein the cross-section of each spacer parallel to the plane of a substrate at said intermediate point (width L2) is no larger in area than either of the substrate contact surfaces (width L1) (col. 23, line 61 through col. 24, line 20);

wherein, re claim 19, each of the two members of each spacer is columnar in shape (col. 23, lines 61-65); and

wherein, re claim 20, the cross-section of each spacer parallel to the plane of a substrate at said intermediate point (width L2) is smaller in area than either of the substrate contact surfaces (width L1) (col. 19, lines 47-57 and col. 24, lines 12-20).

Thus, it would have been obvious to one having ordinary skill in the art at the time the invention was made to modify the touch sensor type liquid crystal display of Fujimori with the teaching of Hasagawa by having the gap controlling spacers having two members with one of the two members contacting the first substrate and the other of the two members contacting the second substrate and the two members contacting each other at a point intermediate between the first and second substrates, the cross-

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section of each spacer parallel to the plane of a substrate at said intermediate point being no larger in area than either of the substrate contact surfaces to permit suppressing the light leakage around the spacer and hence, achieve a good picture image display (col. 24, lines 21-24).

**4. Claims 13-18 are rejected under 35 U.S.C. 103(a) as being unpatentable over Yanawana et al. (Yanawana, JP 2000-227596) in view of Hasegawa et al. (Hasegawa, USPN 5,499,128).**

Re claim 13, as shown in Figs. 11B and 12, Yanawana discloses a liquid crystal display comprising:

a liquid crystal display panel having first and second substrates 1A and 1B arranged oppositely to each other by a specified gap; and

gap controlling spacers 10, each of which restricts a width of the gap and a spacer movement in a planar direction,

wherein arranged densities of said gap controlling spacers are not uniform; and

wherein, re claims 14 and 18, an arranged density of said gap controlling spacers is high (or greater) in a center of the liquid crystal display panel as shown in Figs. 24A and 24B (see Detail Description, paragraphs 198-202); and

wherein, re claim 17, said gap controlling spacers are regularly arranged in a planar direction of the liquid crystal panel as shown in Fig. 11(a).

Yanawana discloses a liquid crystal display that is basically the same as that recited in claim 13 except for each of the spacers having two members with one of the two members contacting the first substrate and the other of the two members contacting

the second substrate and the two members contacting each other at a point intermediate between the first and second substrates, the cross-section of each spacer parallel to the plane of a substrate at said intermediate point being no larger in area than either of the substrate contact surfaces.

As shown in Figs. 12 and 13, Hasegawa discloses a liquid crystal display device comprising gap controlling spacers, each of the spacers having two members 112d with one of the two members contacting a first substrate 111 and the other of the two members contacting a second substrate 141 and the two members contacting each other at a point intermediate between the first and second substrates,

wherein the cross-section of each spacer parallel to the plane of a substrate at said intermediate point (width L2) is no larger in area than either of the substrate contact surfaces (width L1) (col. 23, line 61 through col. 24, line 20);

wherein, re claim 15, each of the two members of each spacer is columnar in shape (col. 23, lines 61-65); and

wherein, re claim 16, the cross-section of each spacer parallel to the plane of a substrate at said intermediate point (width L2) is smaller in area than either of the substrate contact surfaces (width L1) (col. 19, lines 47-57 and col. 24, lines 12-20).

Thus, it would have been obvious to one having ordinary skill in the art at the time the invention was made to modify the touch sensor type liquid crystal display of Fujimori with the teaching of Hasagawa by having the gap controlling spacers formed by two members with one of the two members contacting the first substrate and the other of the two members contacting the second substrate and the two members contacting

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each other at a point intermediate between the first and second substrates, the cross-section of each spacer parallel to the plane of a substrate at said intermediate point being no larger in area than either of the substrate contact surfaces to permit suppressing the light leakage around the spacer and hence, achieve a good picture image display (col. 24, lines 21-24).

**5. Claim 3 is rejected under 35 U.S.C. 103(a) as being unpatentable over Fujimori et al. (Fujimori, USPN 5,852,487) in view of Hasegawa et al. (Hasegawa, USPN 5,499,128) as applied to claims 1, 2, 5-12, 19 and 20 above and further in view of Hatano et al. (Hatano, USPN 6,331,881 B1).**

The touch sensor type liquid crystal display of Fujimori et al. as modified in view of Kishimoto et al. above includes all that is recited in claim 3 except for arranging densities of said gap controlling spacers according to the number of times of touching the touch sensor.

As shown in Fig. 3, Hatano discloses a liquid crystal display comprising a plurality of gap controlling spacers (col. 6, lines 56-61) having different densities in regions B1-B4 to suppress change in display state which may caused by an externally applied pressure even if the plate is soft (col. 11, lines 1-7).

Thus, it would have been obvious to one having ordinary skill in the art at the time the invention was made to further modify the touch sensor type liquid crystal display of Fujimori with the teaching of Hatano by arranging densities of the gap controlling spacers according to the number of times of touching the touch sensor to



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obtain a high self-holding property and suppress change in display state for improving viewing angle (col. 11, lines 1-10).

**6. Claim 4 is rejected under 35 U.S.C. 103(a) as being unpatentable over Fujimori et al. (Fujimori, USPN 5,852,487) in view of Hasegawa et al. (Hasegawa, USPN 5,499,128) as applied to claims 1, 2, 5-12, 19 and 20 above and further in view of Yanawana et al. (Yanawana, JP 2000-227596).**

The touch sensor type liquid crystal display of Fujimori as modified in view of Hasegawa above includes all that is recited in claim 4 except for a high density of said gap controlling spacers in a center of the liquid crystal display panel.

As shown in Figs. 11A, 24A and 24B, Yanawana discloses a liquid crystal display wherein gap controlling spacers 10 are regularly arranged in a planar direction of the liquid crystal display panel and an arranged density of said gap controlling spacers is high in a center of the liquid crystal display panel (see Detailed Description, paragraphs 198-202).

Thus, it would have been obvious to one having ordinary skill in the art at the time the invention was made to further modify the touch sensor type liquid crystal display of Fujimori with the teaching of Yanagawa by arranging a high density of said gap controlling spacers in a center of the liquid crystal display panel for securing the cell gap in the viewing area (paragraph 200).

### ***Response to Arguments***

7. Applicant's arguments filed April 27, 2005 have been fully considered but they are not persuasive.

Re claims 1, 5, 10 and 12, Applicant argued that Fujimori fails to teach or suggest columnar spacers since Fig. 2 of Fujimori shows a grid-like spacer 11. The Examiner disagrees with Applicant's remarks since Fujimori teaches that the polymer projection 11 can be provided in a column pattern, wherein, in the column pattern, the polymer projection 11 is in the form of a plurality of columns at the four outer corners of each pixel region (col. 8, lines 58-64). Thus, Fujimori does not teach away from the claimed invention. It is noted that the Examiner did not refer to Fig. 2 for the rejection in the last office action.

Applicant also argued that Hasegawa does not teach or suggest both contact surfaces of columnar spacers having a contact area greater than the area in the midsection of the columnar spacers since Figs. 10-11 show a recessed portion 143 at the top contact surface of the spacers, wherein this recessed portion causes a significant reduction in the contact area. The Examiner disagrees with Applicant's remarks. At first, Figs. 10-11 were not used by the Examiner for rejection in the last office action. Moreover, as clearly shown in Figs. 12 and 13, Hasegawa discloses a liquid crystal cell comprising a columnar spacer having two members 112d with one of the two members contacting a first substrate 111 and the other of the two members contacting a second substrate 141 and the two members contacting each other at a point intermediate between the first and second substrates, wherein the cross-section of the spacer parallel to the plane of a substrate at said intermediate point (width L2) is no larger in area than either of the substrate contact surfaces (width L1) (col. 23, line 61 through col. 24, line 20). Hasegawa also discloses that the columnar spacer and the

liquid crystal cell are prepared as in the first modification (col. 23, lines 64-65) which corresponds to Fig. 4 where the width L2 of the midsection is also smaller than the width L1 of the substrate contact surfaces (col. 19, lines 43-57). Thus Hasegawa does teach the claimed invention.

In response to applicant's argument that the showings of Hasegawa with respect to the spacers neither designed nor suggested for supporting the loads of touch sensor usage would not be adopted by those of ordinary skill in the pertinent art for touch-sensor devices. The Examiner disagrees with Applicant's remarks since the showings of Fujimori with respect to the columnar spacers are designed or suggested for supporting the loads of touch sensor usage and Hasegawa's reference is employed for teaching a columnar gap controlling spacer having two members contacting each other at a point intermediate between the first and second substrates, wherein the cross-section of the spacer parallel to the plane of a substrate at said intermediate point is no larger in area than either of the substrate contact surfaces of the two members so as to permit suppressing the light leakage around the spacer and achieve a good picture image quality. Thus, those of ordinary skill in the pertinent art for touch-sensor devices would adopt the teaching of Hasegawa to modify the touch sensor type liquid crystal device of Fujimori to produce the claimed invention.

Finally, re claim 13, in response to applicant's arguments, the recitation "touch sensor type" has not been given patentable weight because the recitation occurs in the preamble. A preamble is generally not accorded any patentable weight where it merely recites the purpose of a process or the intended use of a structure, and where the body

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of the claim does not depend on the preamble for completeness but, instead, the process steps or structural limitations are able to stand alone. See *In re Hirao*, 535 F.2d 67, 190 USPQ 15 (CCPA 1976) and *Kropa v. Robie*, 187 F.2d 150, 152, 88 USPQ 478, 481 (CCPA 1951).

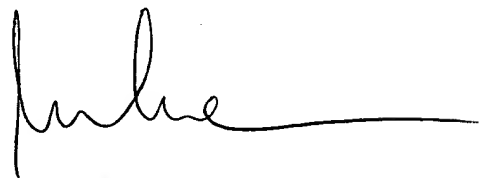
**Conclusion**

8. **THIS ACTION IS MADE FINAL.** Applicant is reminded of the extension of time policy as set forth in 37 CFR 1.136(a).

A shortened statutory period for reply to this final action is set to expire THREE MONTHS from the mailing date of this action. In the event a first reply is filed within TWO MONTHS of the mailing date of this final action and the advisory action is not mailed until after the end of the THREE-MONTH shortened statutory period, then the shortened statutory period will expire on the date the advisory action is mailed, and any extension fee pursuant to 37 CFR 1.136(a) will be calculated from the mailing date of the advisory action. In no event, however, will the statutory period for reply expire later than SIX MONTHS from the mailing date of this final action.

9. Any inquiry concerning this communication or earlier communications from the examiner should be directed to Thoi V. Duong whose telephone number is (571) 272-2292. The examiner can normally be reached on Monday-Friday from 8:30 am to 4:30 pm. If attempts to reach the examiner by telephone are unsuccessful, the examiner's supervisor, Robert Kim, can be reached at (571) 272-2293.

Thoi Duong  
06/29/2005



DUNG T. NGUYEN  
PRIMARY EXAMINER